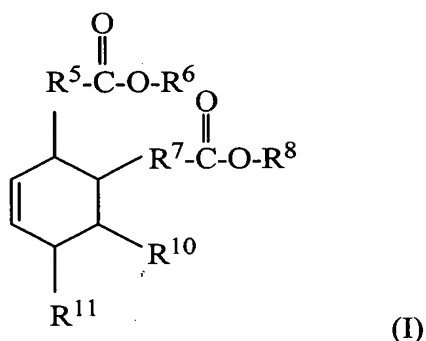


**WHAT IS CLAIMED IS:**

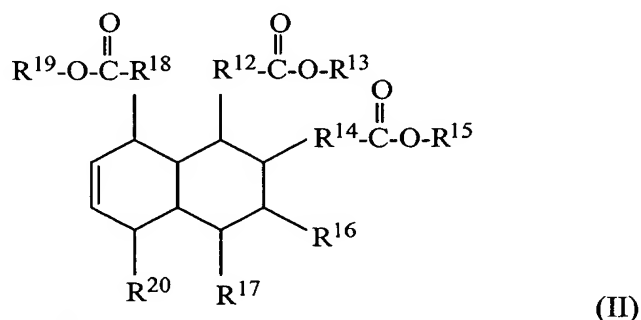
1. A plasticized elastomer composition comprising rubber selected from the group consisting of natural rubber, synthetic rubber, and a combination thereof, and a cyclic dimerate or trimerate ester plasticizer compound having formula I, II, or a mixture thereof:



wherein  $R^5$  and  $R^7$ , same or different, are a  $C_3$ - $C_{24}$  hydrocarbon chain, straight chain or branched, either saturated or having 1 to 6 carbon-to-carbon double bonds;

$R^6$  and  $R^8$ , same or different, are a  $C_3$ - $C_{24}$  alkyl radical, straight chain or branched, saturated, or unsaturated containing 1 to 3 carbon-to-carbon double bonds; and

$R^{10}$  and  $R^{11}$ , same or different, are a  $C_3$ - $C_{24}$ , saturated hydrocarbon chain, straight chain or branched; or an unsaturated  $C_3$ - $C_{24}$ , hydrocarbon chain, straight chain or branched, having 1 to 6 carbon-to-carbon double bonds;

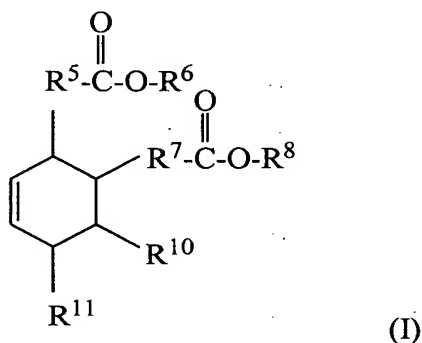


wherein  $R^{12}$ ,  $R^{14}$  and  $R^{18}$ , same or different, are a  $C_3$ - $C_{24}$  hydrocarbon chain, straight chain or branched, either saturated or having 1 to 6 carbon-to-carbon double bonds;

$R^{13}$ ,  $R^{15}$  and  $R^{19}$ , same or different, are a  $C_3$ - $C_{24}$  alkyl radical, straight chain or branched, saturated, or unsaturated containing 1 to 3 carbon-to-carbon double bonds; and

$R^{16}$ ,  $R^{17}$  and  $R^{20}$ , same or different, are a  $C_3$ - $C_{24}$  saturated hydrocarbon chain, straight chain or branched; or unsaturated  $C_3$ - $C_{24}$  hydrocarbon chain, straight chain or branched, containing 1 to 6 carbon-to-carbon double bonds.

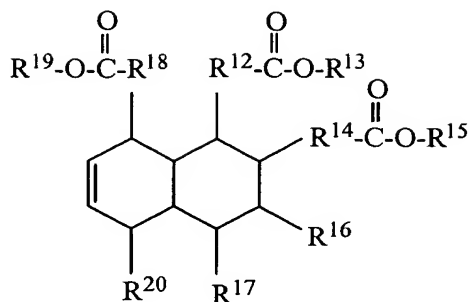
2. A composition in accordance with claim 1, wherein the plasticizer is selected from the group consisting of formula I, II, and a combination thereof:



wherein  $R^5$  and  $R^7$ , are a  $C_6$ - $C_{24}$  hydrocarbon chain, straight chain or branched; either saturated or having 1 to 3 carbon-to-carbon double bonds;

$R^6$  and  $R^8$ , same or different, are a  $C_3$ - $C_{18}$  alkyl radical, straight chain or branched, saturated, or unsaturated containing 1 to 3 carbon-to-carbon double bonds, and

$R^{10}$  and  $R^{11}$ , same or different, are  $C_3$ - $C_{18}$  saturated hydrocarbon chain, straight chain or branched; or an unsaturated hydrocarbon chain, straight chain or branched, containing 1 to 3 carbon-to-carbon double bonds;



(II)

wherein  $R^{12}$ ,  $R^{14}$  and  $R^{18}$ , same or different, are a  $C_6$ - $C_{24}$  hydrocarbon chain, straight chain or branched, either saturated or containing 1 to 3 carbon-to-carbon double bonds;

$R^{13}$ ,  $R^{15}$  and  $R^{19}$ , same or different, are a  $C_3$ - $C_{18}$  alkyl radical, straight chain or branched, saturated, or unsaturated containing 1 to 3 carbon-to-carbon double bonds; and

$R^{16}$ ,  $R^{17}$  and  $R^{20}$ , same or different, are a  $C_3$ - $C_{18}$  saturated hydrocarbon chain, straight chain or branched; or an unsaturated  $C_3$ - $C_{18}$  hydrocarbon-chain, straight chain or branched, containing 1 to 3 carbon-to-carbon double bonds.

3. A composition in accordance with claim 1, wherein the plasticizer compound having formula I, II, or a mixture thereof is present in an amount from about 0.1 parts to about 50 parts by weight per 100 parts of rubber.

4. A composition in accordance with claim 1, wherein the plasticizer compound having formula I, II, or a mixture thereof is present in an amount from about 2 parts to about 40 parts by weight per 100 parts of rubber.

5. A composition in accordance with claim 1, wherein the plasticizer compound having formula I, II, or a mixture thereof is present in an amount from about 10 parts to about 35 parts per 100 parts of rubber.

6. A composition in accordance with claim 1, wherein the plasticizer is an unsaturated diester formed by the reaction of a C<sub>36</sub> dimer acid and a C<sub>3</sub>-C<sub>18</sub> alcohol, straight chain or branched, saturated, or unsaturated containing 1 to 3 carbon-to-carbon double bonds.

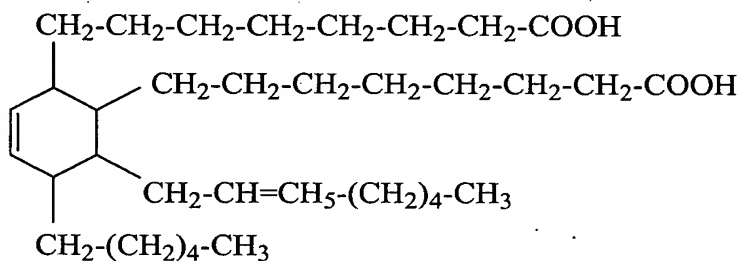
7. A composition in accordance with claim 6, wherein the alcohol is 2-ethylhexyl alcohol.

8. A composition in accordance with claim 6, wherein the alcohol is tridecyl alcohol.

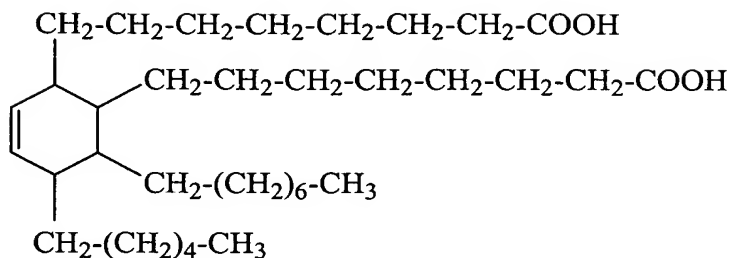
9. A composition in accordance with claim 6, wherein the alcohol is oleyl alcohol.

10. A composition in accordance with claim 6, wherein the alcohol is n-butyl alcohol.

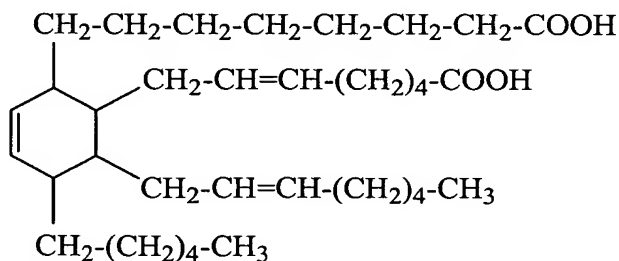
11. A composition in accordance with claim 1, wherein the plasticizer comprises the following dimer acid reacted with a C<sub>3</sub>-C<sub>24</sub> alcohol:



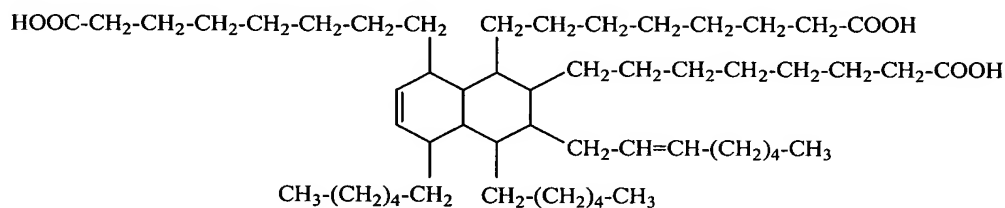
12. A composition in accordance with claim 1, wherein the plasticizer comprises the following dimer acid reacted with a C<sub>3</sub>-C<sub>24</sub> alcohol:



13. A composition in accordance with claim 1, wherein the plasticizer comprises the following dimer acid reacted with a C<sub>3</sub>-C<sub>24</sub> alcohol:



14. A composition in accordance with claim 1, wherein the plasticizer is the reaction product of a C<sub>3</sub>-C<sub>24</sub> alcohol with a tricarboxylic acid, having the following formula:



15. A composition in accordance with claim 1, wherein the plasticizer is a combination of compounds represented by formula I and II.

16. A composition in accordance with claim 15, wherein the plasticizer is a reaction product of a C<sub>3</sub>-C<sub>24</sub> alcohol straight chain or branched, saturated, or unsaturated having 1 to 3 carbon-to-carbon double bonds, with a dimer acid having CAS # 61788-89-4.

17. A composition in accordance with claim 16, wherein the alcohol is 2-ethylhexyl alcohol.

18. A composition in accordance with claim 16, wherein the alcohol is tridecyl alcohol.

19. A rubber composition in accordance with claim 16, wherein the alcohol is oleyl alcohol.

20. A composition in accordance with claim 16, wherein the alcohol is n-butyl alcohol.

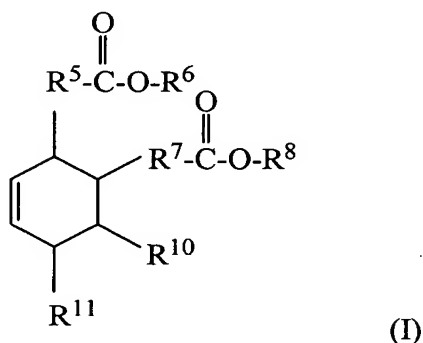
21. The composition in accordance with claim 1, wherein  $R^5$ ,  $R^7$ ,  $R^{12}$ ,  $R^{14}$  are fatty acid residues derived from animal or vegetable fatty acids.

22. The composition of claim 21, wherein the fatty acids are selected from the group consisting of butter; lard; tallow; grease; herring; menhaden; pilchard; sardine; babassu; castor; coconut; corn; cottonseed; jojoba; linseed; oiticia; olive; palm; palm kernel; peanut; rapeseed; safflower; soya; sunflower; tall; tung; and mixtures thereof.

23. The composition of claim 21, wherein the fatty acid residues are selected from the group consisting of hexanoic; octanoic; decanoic; dodecanoic; 9-dodecenoic; tetradecanoic; 9-tetradecenoic; hexadecanoic; 9-hexadecenoic; octadecanoic; 9-octadecenoic; 9-octadecenoic, 12-hydroxy; 9, 12-octadecadienoic; 9, 12, 15-octadecatrienoic; 9, 11, 13-octadecatrienoic; 9, 11, 13-octadecatrienoic; 4-oxo; octadecatetrenoic; eicosanoic; 11-eicosenoic; eicosadienoic; eicosatrienoic; 5, 8, 11, 14-eicosatetraenoic; eicosapentaenoic; docosanoic; 13-docosenoic; docosatetraenoic; 4, 8, 12, 15, 19-docosapentaenoic; docosahexaenoic; tetracosenoic; and 4, 8, 12, 15, 18, 21-tetracosahexaenoic.

24. A method of plasticizing an elastomeric composition, said elastomeric composition including one or more natural or synthetic rubbers, and a rubber vulcanizing agent, comprising adding to said rubber composition, in an amount

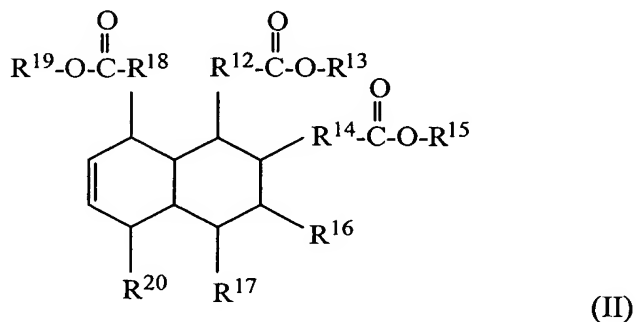
of about 0.1 parts to about 50 parts by weight per 100 parts of rubber in the composition, a cyclic ester plasticizer of formula I, II, or mixtures thereof:



wherein  $R^5$  and  $R^7$ , same or different, are a  $C_3$ - $C_{24}$  hydrocarbon chain, straight chain or branched, either saturated or having 1 to 6 carbon-to-carbon double bonds;

$R^6$  and  $R^8$ , same or different, are a  $C_3$ - $C_{24}$  alkyl radical, straight chain or branched; and

$R^{10}$  and  $R^{11}$ , same or different, are a  $C_3$ - $C_{24}$ , saturated hydrocarbon chain, straight chain or branched; or an unsaturated  $C_3$ - $C_{24}$ , hydrocarbon chain, straight chain or branched, having 1 to 6 carbon-to-carbon double bonds;



wherein  $R^{12}$ ,  $R^{14}$  and  $R^{18}$ , same or different, are a  $C_3$ - $C_{24}$  hydrocarbon chain, straight chain or branched, either saturated or having 1 to 6 carbon-to-carbon double bonds;

$R^{13}$ ,  $R$  and  $R^{19}$ , same or different, are a  $C_3$ - $C_{24}$  alkyl radical, straight chain or branched, saturated, or unsaturated containing 1 to 3 carbon-to-carbon double bonds; and

$R^{16}$ ,  $R^{17}$  and  $R^{20}$ , same or different, are a  $C_3$ - $C_{24}$  saturated hydrocarbon chain, straight chain or branched; or unsaturated  $C_3$ - $C_{24}$  hydrocarbon chain, straight chain or branched, containing 1 to 6 carbon-to-carbon double bonds.

25. The method of claim 24, wherein the cyclic ester plasticizer is added in an amount from about 2 parts to about 40 parts by weight per 100 parts of rubber.

26. The method of claim 24, wherein the cyclic ester plasticizer is added in an amount from about 10 parts to about 35 parts per 100 parts of rubber.